313 Utilization of blood-derived products in pig nutrition. P. Medel*[1], D. Torrallardona[2], L. Llaurado[2], and G. G. Mateos[1], [1]*Universidad Politécnica de Madrid, Spain,* [2]*IRTA-Mas Bova, Tarragona, Spain.*

Two trials were conducted to study the effect of inclusion, and the ileal amino acid digestibility of two blood-derived meal sources in pig diets. In trial one (T1), one hundred twenty male piglets weaned at 20 d of age and weighing an average 5.7 kg were blocked by litter and body weight and used in a 28 d performance trial. From 0 to 14 d the piglets were divided in 3 groups (eight replicates of five piglets each). The only difference among treatments in this phase was the source of blood-derived meal used: 5% of spray dried animal plasma (SDP), 5% of a high quality spray-dried blood meal (HQBM, Blosol A92, DAKA a.m.b.a.), or a 50% mixture of both. From 14 to 28 d of trial each of the 3 pre-starter treatments were divided into two groups that received a diet with 5% of fish meal dried at low temperature (FMLT, 999, Esbjerg Fiskeindustri), or 5% of a regular blood meal (BM, DAKA a.m.b.a.), respectively. In trial two (T2), six males (46.3 kg) were surgically modified with an end to end ileo-rectal anastomosis and ileal digestibility of amino acids was measured for the HQBM and BM samples. The experimental products were mixed with a basal protein-free diet to obtain feeds with 18.7 and 19.5% crude protein for the HQBM and BM diets, respectively. Each diet was tested in all the animals using a 2 d quantitative collection period preceeded by a 5 d adaptation period. In T1, no differences among treatments were detected from 0 to 14 d for any of the traits studied. From 14 to 28 d, diets containing BM allowed the same growth rate (495 vs 485 g/d, P > .10), but poorer feed conversion (1.29 vs 1.35, P = .10) than FMLT diets. The ileal digestibilities of all the amino acids except for isoleucine were greater for HQBM than for BM (P < .05). The digestibility coefficients for lysine, threonine, methionine, cystine, and tryptophan were 99.4, 99.2, 99.3, 98.7, 95.7 for HQBM, and 98.3, 97.8, 98.5, 96.0, 91.9 for BM, respectively. It is concluded that both HQBM and BM can be used succesfully in pig feeds, although feed conversion tended to be impaired when BM was used in substitution of FMLT.

Key Words: Blood meal, Pigs

314 Perfect Pro® as a source of protein for weanling pigs. A. C. Guzik*, L. L. Southern, and T. D. Bidner, .

Three experiments were conducted to evaluate the use of Perfect Pro® (PP) as a source of protein. In each experiment, treatments were replicated with four (Exp. 1 and 2) or seven (Exp. 3) pens of three to five pigs each. Each experiment lasted from three to four weeks for the combined Phase I (1.5% Lys in Exp. 1 and 2, 1.6% Lys in Exp. 3) and Phase II (1.3% Lys) periods. In Exp. 1 (6.7 kg and 23 d of age) and 2 (6.1 kg and 22 d of age), pigs were fed one of three Phase I diets: 1) basal (B) diet containing corn, SBM, whey, fish meal, and blood cells (AP-301 G), 2) B + 4% spray dried porcine plasma (SDPP), or 3) B + 2% SDPP+2% PP. In Phase II, the dietary groups from Phase I were divided into two subsequent groups. One group received a diet containing corn, SBM, whey, fish meal, and 2% blood cells, and the second group received this same diet with 2% PP, resulting in six treatments for the Phase II and overall periods. In Exp. 1, ADG and ADFI were increased (P<.10) during Phase I in pigs fed 4% SDPP or 2% SDPP+2% PP. Gain:feed (GF) was not affected (P>.10) during Phase I. In Phase II, the 2% PP addition did not affect ADG, ADFI, or GF. Also, Phase I diets did not affect (P>.10) growth performance during Phase II. Overall, ADG (P<.10) and ADFI (P<.04) were increased in pigs fed 2% SDPP+2% PP during Phase I. In Exp. 2, ADG and GF were increased in pigs fed 2% SDPP+2% PP during Phase I. During Phase II, ADFI was increased in pigs fed 2% SDPP+2% PP relative to those fed the basal diet (P<.005) or the diet containing 4% SDPP (P<.01) in Phase I. Also in Phase II, GF was increased in pigs fed 2% SDPP+2% PP (P<.03) relative to those fed 4% SDPP. Overall, ADG and GF were not affected (P>.10) by diet, but ADFI was increased in pigs fed 2% SDPP+2% PP (P<.03) relative to the basal diet. In Exp. 3, all pigs (5.7 kg and 17 d of age) were fed a Phase I diet containing 2% SDPP+2% PP. In Phase II, ADG, ADFI, and GF were not affected (P>.10) by the addition of 2% PP relative to 2% blood cells. Overall, pigs fed 2% SDPP+2% PP have equal performance to those fed 4% SDPP.

Key Words: Pigs, Protein Sources, Growth

315 Effects of water soluble globulin on the performance of weanling pigs. B. S. Borg*, J. M. Campbell, L. E. Russell, D. U. Thomson, and E. M. Weaver, *American Protein Corporation, Ames, IA.*

Three-hundred weanling pigs (5.0 kg initial weight, 14-21 d of age) were used in a 28 d experiment to evaluate the effects of a water soluble globulin protein (WSGP). Pigs were blocked by sex and initial weight and randomly allotted to two experimental treatments with 25 pigs/pen and 6 replications/treatment. Experimental treatments included a typical pelleted 3-phase nursery program with and without WSGP. Total lysine content of diets offered was 1.65, 1.30 and 1.20% for phases one, two and three, respectively. Spray-dried animal plasma was included at a level of 4% in the phase one diet. Pigs were fed the various diets for 7, 14 and 7 days for phase one, two and three, respectively. WSGP was supplied through the water source for 14 d using a commercially available proportional dispenser. Compared to d 0-7, the concentration delivered was reduced by 50% during d 7-14. During the initial 7 d, pigs receiving WSGP had improved (P<.001) average daily gain (ADG), average daily feed intake (ADFI) and gain/feed (G/F) compared to the controls. Relative improvements in each measure were 65, 33 and 27% for ADG (0.130 vs 0.215 kg), ADFI (0.137 vs 0.182 kg) and G/F (0.94 vs 1.19). From d 7-14, ADG (0.227 vs 0.318 kg), ADFI (0.304 vs 0.373) and G/F (0.74 vs 0.86) was improved (P<.02) for pigs receiving WSGP compared to controls. Overall (d 0-28) WSGP improved performance (P<.01), ADG, ADFI and G/F was 0.300 kg, 0.398 kg, 0.76; and 0.350 kg, 0.438 kg, 0.80 for control and WSGP pigs, respectively. These results suggest the WSGP improves performance from d 0-14 and the enhancement in performance is maintained through 28 d postweaning.

Key Words: Globulin protein, weanling pigs, liquid-feeding

316 Use of spray dried plasma in combination with different types of milk proteins in diets for piglets. P. Medel[1], F. Baucells[2], J. C. de Blas[1], and G. G. Mateos*[1], [1]*Universidad Politecnica de Madrid, Spain,* [2]*Pinsos Baucells, Barcelona, Spain.*

A trial was conducted to evaluate the influence of milk protein source (casein vs serum proteins) and spray dried animal plasma (SDP) supplementation (0% inclusion vs 4% of either APC-920 or Proglobulin) on performance of piglets weaned at 21-d. A total of 180 male piglets (21-d and 5.4 kg of average body weight) were used in a 2 x 3 factorial experiment with 6 replicates of five piglets per treatment. The experimental diets were formulated to be isonutritive (2500 kcal/kg NE, 21.6% crude protein, 1.54% total lysine, and 10.3% lactose) and were offered ad libitum for 20-d. Afterwards, all the replicates were fed a common starter diet containing 2435 kcal/kg NE, 21% crude protein and 1.28% total lysine. Spray dried animal plasma supplementation improved growth at 10 (187 vs 154 g/d; P = .01) and at 20-d of trial (346 vs 312 g/d; P < .01). The effect was mostly due to an increase in feed consumption (191 vs 162 g/d, P = .02, and 379 vs 346 g/d, P = .09, from 0 to 10, and from 0 to 20-d, respectively). Feed conversion was not modified by SDP addition. Diets that included casein as the main milk protein source showed better feed conversion than diets based on serum protein at 10 (1.01 vs 1.11 g/g; P = .10) and at 20-d (1.08 vs 1:13 g/g; P = .14) of trial. A significant interaction between milk protein source and SDP suplementation was observed for average daily gain, but not for feed conversion; the addition of SDP improved growth more in piglets fed milk serum proteins than in piglets fed casein (P = .03). No differences were detected between SDP sources for any of the parameters studied. It is concluded that SDP addition improves growth of piglets mostly due to an increase of feed consumption and that casein diets tended to decrease feed conversion with respect to serum milk protein diets during the first 20-d after weaning. The addition of SDP resulted in better performance when serum vs casein protein was used.

Key Words: Milk protein, Spray dried plasma, Piglets

317 Effects of increasing pellet conditioning temperature of diets containing spray-dried animal plasma on weanling pig performance. M. U. Steidinger*[1], R. D. Goodband[1], M. D. Tokach[1], J. L Nelssen[1], L. J. McKinney[1], J. C. Woodworth[1], B. S. Borg[2], and J. M. Campbell[2], [1]*Kansas State University,* [2]*American Protein Corp. Ames, IA.*

Two hundred fifty-two weanling pigs (6.0 kg, 1.3 kg SD) 3 d of age; PIC) were used in a 14 d g cts of